



I, Tadahiko Itoh, a Patent Attorney of Tokyo, Japan having my office at 32nd Floor, Yebisu Garden Place Tower, 20-3, Ebisu 4-chome, Shibuya-ku, Tokyo 150-6032, Japan do solemnly and sincerely declare that I am the translator of the attached English translation and certify that the attached English translation is a correct, true and faithful translation of the Japanese Patent Application No. 2003-022143 to the best of my knowledge and belief.

A handwritten signature in black ink, appearing to read "Tadahiko Itoh".

---

Tadahiko Itoh

Patent Attorney  
Itoh International Patent Office  
32nd Floor, Yebisu Garden Place Tower,  
20-3, Ebisu 4-chome, Shibuya-ku,  
Tokyo 150-6032, Japan



- 1 -

TITLE OF THE INVENTION

DOCUMENT MANAGEMENT DEVICE

TECHNICAL FIELD

The present invention relates to a document management device and a document management method, particularly, to a document management device having a document storage unit for storing a document, and able to generate usage permission information, in response to a request, to permit usage of the document storage unit.

10 TECHNICAL BACKGROUND

In a server having folders for storing documents, in general, it is set that each user is allowed to use specific folders. For example, the server may permit a user A to store documents (authority of storage) and to rewrite/delete documents in a folder C of the server (authority of rewrite/deletion), and the server may also grant another user B only an authority of storage in the folder C of the server, that is, permits the user B to store documents in the folder C.

For example, the user A sends its username and password from a device X to the server through a network, and when connection between the device X with the server is allowed, the user A sends documents held in the device X to the server, and stores the documents

in the folder C of the server, or rewrites or deletes the documents in the folder C.

#### DISCLOSURE OF THE INVENTION

5

#### TECHNICAL PROBLEMS TO BE SOLVED BY THE INVENTION

In the related art, however, if documents are not held in the device X but in a device Y, which is connected with the device X through the network, the user A is not allowed to store documents in folders of the server directly from the device Y from the point of view of security of the system, although the operation of the user A from the device X is allowed. In order to store documents held in the device Y in the server, the documents have to be first transferred to the device X from the device Y through the network, and then the user A can store the transferred documents to the server from the device X. As result, additional loads are imposed on the network.

20

An object of the present invention is to provide a device and a method for document management enabling usage of a usage-permitted folder while ensuring high security without imposing an additional load on a network.

25

According to an invention claimed in claim 1,

there is provided a document management device having a document storage unit for storing a document. The document management device includes a usage permission information request reception unit configured to  
5 receive a request from a client for acquiring usage permission information that permits usage of the document storage unit, a usage permission information generation unit configured to generate the usage permission information in response to the received  
10 request, and a usage permission information transmission unit configured to transmit the usage permission information to the client.

According to the present invention, because the document management device includes a usage  
15 permission information request reception unit for receiving a request for acquiring usage permission information that permits usage of the document storage unit, a usage permission information generation unit for generating the usage permission information in  
20 response to the received request, and a usage permission information transmission unit for transmitting the usage permission information to the client, it is possible to use a usage-permitted folder while ensuring high security without imposing an  
25 additional load on a network.

According to the invention as claimed in claim 2, the usage permission information generation unit generates the usage permission information and identification information of the usage permission  
5 information, and holds the usage permission information.

According to the present invention, because the usage permission information generation unit generates the usage permission information and identification information thereof and holds the usage  
10 permission information, it is possible to manage the usage permission information.

According to the invention as claimed in claim 3, the usage permission information transmission unit transmits the identification information to the  
15 client as the usage permission information.

In response to the present invention, because the usage permission information transmission unit transmits the identification information to the client as the usage permission information, the  
20 identification information is provided to the client as the usage permission information.

According to the invention as claimed in claim 4, the usage permission information includes identification information of the document storage unit  
25 and authority information of the usage permission

information.

According to the present invention, because the usage permission information includes identification information of the document storage unit  
5 and authority information of the usage permission information, it is possible to provide the usage permission information of different authorities.

According to the invention as claimed in claim 5, the usage permission information includes  
10 identification information of the document storage unit and effective period information of the usage permission information.

According to the present invention, because the usage permission information includes  
15 identification information of the document storage unit and effective period information of the usage permission information, it is possible to set an effective period in the usage permission information.

According to the invention as claimed in claim 6, the usage permission information includes  
20 identification information of the document storage unit and information of a maximum number of connections with the document management device.

According to the present invention, because  
25 the usage permission information includes

identification information of the document storage unit and information of a maximum number of connections with the document management device, it is possible to set a maximum number of connections with the document

5 management device in the usage permission information.

According to the invention as claimed in claim 7, the usage permission information includes identification information of the document storage unit and information of a maximum number of operations of  
10 document storage in the document storage unit.

According to the present invention, because the usage permission information includes identification information of the document storage unit and information of a maximum number of operations of  
15 document storage in the document storage unit, it is possible to set the maximum number of document storage operations in the document storage unit in the usage permission information.

According to the invention as claimed in claim 8, the usage permission information includes identification information of the document storage unit and information of a capacity of effective document  
20 storage in the document storage unit.

According to the present invention, because  
25 the usage permission information includes



identification information of the document storage unit and information of a capacity of effective document storage in the document storage unit, it is possible to set the effective document storage capacity in the  
5 usage permission information.

According to the invention as claimed in claim 9, the usage permission information includes identification information of a plurality of the document storage units.

10 According to the present invention, because the usage permission information includes identification information of a plurality of the document storage units, it is possible to permit usage of more than one document storage units.

15 According to the invention as claimed in claim 10, the document management device further has a usage request reception unit configured to receive a request from a client for using the document storage unit, and a usage unit configured to use the document  
20 storage unit according to the usage permission information.

According to the present invention, because the document management device further has a usage request reception unit to receive a request for using  
25 the document storage unit and a usage unit to use the

document storage unit, it is possible to allow the client requesting the usage permission information to use the document storage unit.

5                   According to the invention as claimed in claim 11, the usage request includes information on the document and information on the document storage unit.

                  According to the present invention, because the usage request includes information on the document  
10                   and information on the document storage unit, it is possible to store a specified document in the document storage unit permitted for use, or to rewrite or delete the documents held in the document storage unit permitted for use.

15                   According to the invention as claimed in claim 12, the usage unit stores the document in the document storage unit according to the usage permission information.

                  According to the present invention, because  
20                   the usage unit stores the document in the document storage unit according to the usage permission information, it is possible to store a specified document in the document storage unit permitted for use.

                  According to the invention as claimed in  
25                   claim 13, the document management device further has a

document identification information appending unit  
configured to append document identification  
information for identifying the stored document to the  
usage permission information. The information is  
5 appended as an editable data.

According to the present invention, because  
the document management device has a document  
identification information appending unit to append  
document identification information to the usage  
10 permission information, and the information is appended  
as an editable data, the client that stores the  
specified document in the document storage unit is able  
to modify the stored document.

According to the invention as claimed in  
15 claim 14, the document management device further has a  
document identification information transmission unit  
configured to transmit the document identification  
information for identifying the stored document to the  
client that requests usage of the document storage unit.

20 According to the present invention, because  
the document management device further has a document  
identification information transmission unit to  
transmit the document identification information, the  
client that stores the specified document in the  
25 document storage unit is able to identify the stored

document.

According to the invention as claimed in claim 15, the document management device further has a document usage permission information transmission unit  
5 configured to transmit information for permitting usage of the stored document to the client that requests usage of the document storage unit.

According to the present invention, because the document management device has a document usage  
10 permission information transmission unit to transmit information for permitting usage of the stored document, the client that stores the specified document in the document storage unit is able to utilize the stored document.

15 According to the invention as claimed in claim 16, the usage unit includes a determination unit that determines whether the document storage unit requested by the usage request is at a lower level than the document storage unit in the usage permission  
20 information generation unit.

According to the present invention, because the usage unit includes a determination unit to determine if the document storage unit requested by the usage request is at a lower level than the document  
25 storage unit, it is possible to permit use of the

document storage unit even if the document storage unit specified by the client is at a lower level than the document storage unit permitted for use.

According to the invention as claimed in  
5 claim 17, the document management device further has a document list information request reception unit configured to receive a request from a client for acquiring document list information of documents stored in the document storage unit, and a document list  
10 information transmission unit configured to transmit the document list information to the client.

According to the present invention, because the document management device has a document list information request reception unit to receive a request  
15 from a client for acquiring document list information of the stored documents and a document list information transmission unit to transmit the document list information to the client, it is possible to provide a document list to the client when necessary.

20 According to the invention as claimed in claim 18, the document management device further has a document content information request reception unit configured to receive a request from a client for acquiring information of contents of the document  
25 stored in the document storage unit, and a document

content information transmission unit configured to transmit the document content information to the client in response to the received request.

According to the present invention, because  
5 the document management device has a document content information request reception unit to receive a request from a client for acquiring document content information and a document content information transmission unit to transmit the document content  
10 information to the client in response to the received request, it is possible to provide contents of the document to the client when necessary.

According to the invention as claimed in claim 19, the document management device further has a  
15 connection permission request reception unit configured to receive a request from a client for acquiring connection permission information that includes the usage permission information and permits connection with the document management device, a connection  
20 permission information generation unit configured to generate the connection permission information in response to the received request, and a connection permission information transmission unit configured to transmit the connection permission information to the  
25 client.

According to the present invention, because the document management device has a connection permission request reception unit to receive a request from a client for acquiring connection permission information that includes the usage permission information and permits connection with the document management device, a connection permission information generation unit to generate the connection permission information in response to the received request, and a connection permission information transmission unit to transmit the connection permission information to the client, it is possible to supply the connection permission information including the usage permission information to the client that makes the request to acquire the information.

According to the invention as claimed in claim 20, the document management device further comprises an identification information request reception unit to receive a request from a client for acquiring identification information of the document storage unit, and an identification information transmission unit to transmit the identification information to the client that requests the information. The identification information of the document storage unit includes the connection permission information and

the usage permission information.

According to the present invention, because the document management device further has an identification information request reception unit to  
5 receive a request from a client for acquiring identification information of the document storage unit, and an identification information transmission unit to transmit the identification information to the client requesting the information, it is possible to supply  
10 the identification information of the document storage unit including the connection permission information and the usage permission information to the client requesting to acquire the information.

According to the invention as claimed in  
15 claim 21, there is provided a method of a document management device having a document storage unit for storing a document, the method includes the steps of receiving a request from a client for acquiring usage permission information that permits usage of the  
20 document storage unit, generating the usage permission information in response to the received request, and transmitting the usage permission information to the client.

According to the present invention, because  
25 the document management method includes the steps of



receiving a request from a client for acquiring usage permission information that permits usage of the document storage unit, generating the usage permission information in response to the received request, and  
5 transmitting the usage permission information to the client, it is possible to use a usage-permitted folder while ensuring high security without imposing an additional load on a network.

According to the invention as claimed in  
10 claim 22, the document management method further includes the steps of receiving a request from a client for using the document storage unit, and using the document storage unit according to the usage permission information.

15 According to the present invention, because the document management method further includes the steps of receiving a request for using the document storage unit, and using the document storage unit according to the usage permission information, it is  
20 possible to allow the client that made the request to use the document storage unit.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic view of a hardware  
25 configuration of a document management server 10

according to the present invention;

FIG. 2 is a diagram showing a document storage operation in the document management server 10 as an example of a document management method of the present invention and an operation of the document management server 10;

FIG. 3 is a table showing an example of a folder ticket;

FIG. 4 is a table showing an example of a folder-ticket-associated session ticket;

FIG. 5 is a program showing an example of a session ticket acquisition request;

FIG. 6 is a program showing an example of a session ticket acquisition response;

FIG. 7 is a program showing an example of a folder ticket acquisition request;

FIG. 8 is a program showing an example of a folder ticket acquisition response;

FIG. 9 is a program showing an example of a document storage information request;

FIG. 10 is a program showing an example of a document storage information response;

FIG. 11 is a program showing an example of a folder-ticket-associated session ticket acquisition request;

FIG. 12 is a program showing an example of a folder-ticket-associated session ticket acquisition response;

FIG. 13 is a program showing an example of a  
5 folder-ticket-associated folder ID acquisition request;

FIG. 14 is a program showing an example of a folder-ticket-associated folder ID acquisition response;

FIG. 15 is a program showing an example of a  
10 document storage request;

FIG. 16 is a program showing an example of a document storage response;

FIG. 17 is a program showing an example of a document list acquisition request;

15 FIG. 18 is a program showing an example of a document list acquisition response;

FIG. 19 is a program showing an example of a document content acquisition request;

FIG. 20 is a program showing an example of a  
20 document content acquisition response;

FIG. 21 is a flowchart showing an example of an operation of document storage in the document management server 10;

FIG. 22 is a program showing a second  
25 example of the folder ticket acquisition request;

FIG. 23 is a table showing a second example of the folder ticket;

FIG. 24 is a flowchart showing an example of an operation of time limit confirmation by a folder  
5 ticket at the starting time of a session;

FIG. 25 is a program showing a third example of the folder ticket acquisition request;

FIG. 26 is a table showing a third example of the folder ticket;

10 FIG. 27 is a flowchart showing an example of an operation of confirmation of the limit number of connections at the beginning of the folder-ticket-associated session;

FIG. 28 is a program showing a fourth  
15 example of the folder ticket acquisition request;

FIG. 29 is a table showing a fourth example of the folder ticket;

FIG. 30 is a table showing a second example of the folder-ticket-associated session ticket;

20 FIG. 31 is a flowchart showing an example of the operation of confirmation of the document storage limit when storing a document in a folder in the document management server 10;

FIG. 32 is a program showing a fifth example  
25 of the folder ticket acquisition request;

FIG. 33 is a table showing a fifth example of the folder ticket;

FIG. 34 is a table showing a third example of the folder-ticket-associated session ticket;

5           FIG. 35 is a flowchart showing an example of the operation of confirmation of the storage capacity limit when storing a document in a folder in the document management server 10;

FIG. 36 is a program showing a sixth example  
10 of the folder ticket acquisition request;

FIG. 37 is a table showing a sixth example of the folder ticket;

FIG. 38 is a schematic view showing an example of a layer structure of a folder;

15           FIG. 39 is a flowchart showing a second example of the operation of document storage in the document management server 10;

FIG. 40 is a flowchart showing a third example of the operation of document storage in the  
20 document management server 10;

FIG. 41 is a program showing another example of the document storage response;

FIG. 42 is a flowchart showing a fourth example of the operation of document storage in the  
25 document management server 10; and

•

driver 21; data or programs of the document management server 10 are installed in the ROM 22 through the driver 21 and the bus B. For example, the recording medium may be a CD-ROM.

5               ROM 22 stores data or programs of the document management server 10. RAM 23 reads out the programs from the ROM 22 when the document management server 10 is booted and stores the programs. CPU 24 executes processing according to the programs stored in  
10   RAM 23.

              HD 26 stores data, file and documents described below.

              Below, operation of document storage in the document management server 10 is described to  
15   illustrate an example of the document management method of the present invention and the operations of the document management server 10.

              FIG. 2 is a diagram showing the document storage operation in the document management server 10  
20   as an example of the document management method of the present invention and the operation of the document management server 10.

              In step S10, client A, being connected with the document management server 10 through the network,  
25   sends a session ticket acquisition request to the

document management server 10 to obtain a session ticket, which permits connection of the client A with the document management server 10. An example of the session ticket acquisition request is illustrated below  
5 with reference to FIG. 5.

Next, in step S11, the document management server 10 creates contents of the session ticket and a session ticket ID (IDentification) in response to the session ticket acquisition request, and sends a session  
10 ticket acquisition response to the client A. The session ticket acquisition response includes the session ticket ID which is used to represent the session ticket. An example of the session ticket acquisition response is illustrated below with  
15 reference to FIG. 6.

Next, in step S12, the client A sends a folder ticket acquisition request to the document management server 10 to obtain a folder ticket, which is usage permission information for using folders of  
20 the document management server 10. The folder ticket acquisition request includes the session ticket obtained in step S11. An example of the folder ticket acquisition request is illustrated below with reference to FIG. 7.

25 Next, in step S13, the document management



server 10 creates contents of the folder ticket and a folder ticket ID in response to the folder ticket acquisition request, and sends a folder ticket acquisition response to the client A. The folder ticket acquisition response includes the folder ticket ID which is used to represent the folder ticket. The document management server 10 also holds the created folder ticket. An example of the folder ticket acquisition response is illustrated below with reference to FIG. 8, and an example of the folder ticket is illustrated below with reference to FIG. 3.

Next, in step S14, the client A sends a document storage information request to a client B. The document storage information request includes the folder ticket; and it indicates a folder of the document management server 10 and a document to be stored in the folder. An example of the document storage information request is illustrated below with reference to FIG. 9.

Next, in step S15, the client B sends a document storage information response to the client A in response to the document storage information request obtained in step S14. An example of the document storage information response is illustrated below with reference to FIG. 10.

Next, in step S16, the client B sends a session ticket acquisition request to the document management server 10 to obtain a session ticket, which permits connection of the client B with the document management server 10. The session ticket acquisition request includes the folder ticket, and this session ticket requested by the client B is therefore associated with the folder ticket obtained from the client A in the step S13. Below, this session ticket is referred to as a "folder-ticket-associated session ticket", and the session ticket acquisition request made by the client B in the present step is referred to as a "folder-ticket-associated session ticket acquisition request". An example of the folder-ticket-associated session ticket acquisition request is illustrated below with reference to FIG. 11.

Next, in step S17, the document management server 10 creates contents of the folder-ticket-associated session ticket and a folder-ticket-associated session ticket ID in response to the folder-ticket-associated session ticket acquisition request, and sends a folder-ticket-associated session ticket acquisition response to the client B. The folder-ticket-associated session ticket acquisition response includes the folder-ticket-associated session ticket ID

to represent the folder-ticket-associated session ticket. The document management server 10 holds the created folder-ticket-associated session ticket. An example of the folder-ticket-associated session ticket acquisition response is illustrated below with reference to FIG. 12, and an example of the folder-ticket-associated session ticket is illustrated below with reference to FIG. 4.

Next, in step S18, the client B sends a folder ID acquisition request to the document management server 10 to obtain a folder ID, which is the ID of the folder permitted to be used by the document management server 10, and the folder ID acquisition request includes the folder ticket obtained in step S14 and the session ticket obtained in step S17. Similarly, this folder ID requested by the client B is associated with the folder ticket obtained from the client A in the step S13. Below, this folder ID is referred to as a "folder-ticket-associated folder ID", and the folder ID acquisition request made by the client B in the present step is referred to as a "folder-ticket-associated folder ID acquisition request". An example of the folder-ticket-associated folder ID acquisition request is illustrated below with reference to FIG. 13.

Next, in step S19, the document management server 10 sends a folder-ticket-associated folder ID acquisition response to the client B in response to the folder-ticket-associated folder ID acquisition request  
5 obtained in step S18. The folder-ticket-associated folder ID acquisition response includes the folder-ticket-associated folder ID. An example of the folder-ticket-associated folder ID acquisition response is illustrated below with reference to FIG. 14.

10               Next, in step S20, the client B sends a document storage request to the document management server 10. The document storage request includes the folder-ticket-associated session ticket obtained in step S17, the folder-ticket-associated folder ID  
15 obtained in step S19 and contents of the documents to be stored. An example of the document storage request is illustrated below with reference to FIG. 15.

Next, in step S21, in response to the document storage request obtained in step S20, the  
20 document management server 10 sends a document storage response to the client B. The document storage response directs to store the specified document to the specified folder and includes a document ID for identifying the stored document. An example of the  
25 document storage response is illustrated below with

reference to FIG. 16.

Next, in step S22, the client A sends a document list acquisition request to the document management server 10 to obtain a document list of the documents stored in the folder of the document management server 10. An example of the document list acquisition request is illustrated below with reference to FIG. 17.

Next, in step S23, the document management server 10 sends a document list acquisition response in response to the document list acquisition request obtained in step S22 to the client A. The document list acquisition response includes the document list. An example of the document list acquisition response is illustrated below with reference to FIG. 18.

Next, in step S24, the client A sends a document content acquisition request to the document management server 10 to obtain the contents of the document stored in the folder of the document management server 10. An example of the document content acquisition request is illustrated below with reference to FIG. 19.

Next, in step S25, the document management server 10 sends a document content acquisition response in response to the document content acquisition request

obtained in step S24 to the client A. The document content acquisition response includes the contents of the document. An example of the document content acquisition response is illustrated below with  
5 reference to FIG. 20.

According to the method illustrated in FIG. 2, a user transfers a folder ticket from the client A to the client B, thereby, enabling direct storage of documents in the document management server 10 from the  
10 client B.

Therefore, once the client A obtains a document from the client B, the client A then transmits the document to the document management server 10. Therefore, it is not necessary to store the document,  
15 and there is no additional load imposed on the network.

FIG. 3 is a table showing an example of the folder ticket.

As shown in FIG. 3, in the folder ticket, there is a folder ID for identifying the folder that  
20 the folder ticket is permitted to use. Once the folder ticket acquisition request is received, the document management server 10 creates the folder ticket associated with the folder ticket acquisition request and holds the folder ticket.

25 The folder ticket may also include

information on the authority of the folder ticket, In addition to the folder ID shown in FIG. 3.

For example, the folder ticket shown in FIG. 3 may include data indicating whether the folder ticket only has the authority of storing documents in the folder, or has all of the authorities of storing documents in the folder, rewriting the stored documents, and deleting the stored documents.

By incorporating the authority information into the folder ticket, the document management server 10 can provide folder tickets having different authorities for the client.

FIG. 4 is a table showing an example of a folder-ticket-associated session ticket.

As shown in FIG. 4, in the folder-ticket-associated session ticket, there are a session ticket ID and a folder ticket ID. Once the folder-ticket-associated session ticket acquisition request is received, the document management server 10 creates the folder-ticket-associated session ticket in response to the folder-ticket-associated session ticket acquisition request and holds the folder-ticket-associated session ticket.

FIG. 5 is a program showing an example of the session ticket acquisition request.

As shown in FIG. 5, the session ticket acquisition request includes tags `<userid></userid>`, `<password></password>`, `<timeLimit></timeLimit>` and others. A user ID is included in the tag  
5 `<userid></userid>`, a password is in the tag `<password></password>`, and the effective duration is in the tag `<timeLimit></timeLimit>` in units of seconds.

The client A transmits the session ticket acquisition request shown in FIG. 5 to the document  
10 management server 10.

FIG. 6 is a program showing an example of the session ticket acquisition response.

As shown in FIG. 6, the tag `<returnValue></returnValue>` in the session ticket  
15 acquisition response holds the session ticket.

As described above, the document management server 10 creates contents of the session ticket and the session ticket ID in response to the session ticket acquisition request, and sends the session ticket  
20 acquisition response, which includes the session ticket ID to represent the session ticket, to the client A.

FIG. 7 is a program showing an example of the folder ticket acquisition request.

As shown in FIG. 7, the tag  
25 `<sessionid></sessionid>` in the folder ticket



acquisition response includes the session ticket, and the tag `<folderId></folderId>` in the folder ticket acquisition response includes the folder ID of the document management server 10.

5               The client A sends the folder ticket acquisition request to the document management server 10, which includes the session ticket obtained in the session ticket acquisition response shown in FIG. 6 and the folder ID desired to be permitted.

10              FIG. 8 is a program showing an example of the folder ticket acquisition response.

As shown in FIG. 8, the tag `<returnValue></returnValue>` in the folder ticket acquisition response holds the folder ticket.

15              The document management server 10 creates contents of the folder ticket and the folder ticket ID in response to the folder ticket acquisition request, and sends the folder ticket acquisition response, which includes the folder ticket ID to represent the folder  
20 ticket, to the client A.

The document management server 10, in response to the folder ticket acquisition request from the client, can transmit the folder ticket that permits usage of the folder to the client that made the request.

25              FIG. 9 is a program showing an example of

the document storage information request.

As shown in FIG. 9, in the document storage information request, the tag `<ticket></ticket>` includes the folder ticket obtained by the client A from the  
5 folder ticket acquisition response in FIG. 8, and the tag `<targetUrl></targetUrl>` includes the URL of the document management server 10.

The client A sends the document storage information request shown in FIG. 9 to the client B. In  
10 the document storage information request shown in FIG. 9, for example, the client B is a scanner.

Further, the document storage information request shown in FIG. 9 may also include layer structure information of folders in the document  
15 management server 10.

FIG. 10 is a program showing an example of the document storage information response.

Once the client B receives the document storage information request as shown in FIG. 9 from  
20 client A, the client B sends the document storage information response illustrated in FIG. 10 to the client A.

FIG. 11 is a program showing an example of the folder-ticket-associated session ticket acquisition  
25 request.

As shown in FIG. 11, in the folder-ticket-associated session ticket acquisition request, the tag <ticket></ticket> includes the folder ticket obtained by the client A, and the tag <timeLimit></timeLimit>  
5 includes the effective duration of the folder-ticket-associated session ticket.

The client B sends the folder-ticket-associated session ticket acquisition request to the document management server 10.

10 FIG. 12 is a program showing an example of the folder-ticket-associated session ticket acquisition response.

As shown in FIG. 12, in the folder-ticket-associated session ticket acquisition response, the tag  
15 <returnValue></returnValue> includes the folder-ticket-associated session ticket.

The document management server 10 creates contents of the folder-ticket-associated session ticket and the -ticket-associated session ticket ID in  
20 response to the folder-ticket-associated session ticket acquisition request, and sends the folder-ticket-associated session ticket acquisition response, which includes the folder-ticket-associated session ticket ID to represent the folder-ticket-associated session  
25 ticket, to the client B.

FIG. 13 is a program showing an example of the folder-ticket-associated folder ID acquisition request.

As shown in FIG. 13, in the folder-ticket-associated folder ID acquisition request, the tag `<sessionid></sessionid>` includes the folder-ticket-associated folder ID, and the tag `<ticket></ticket>` includes the folder ticket obtained by the client A.

The client B sends the folder-ticket-associated folder ID acquisition request as shown in FIG. 13 to the document management server 10.

FIG. 14 is a program showing an example of the folder-ticket-associated folder ID acquisition response.

As shown in FIG. 14, in the folder-ticket-associated folder ID acquisition response, the tag `<returnValue></returnValue>` includes the folder ID.

The document management server 10 obtains the folder ID from the folder ticket as shown in FIG. 3 in response to the folder-ticket-associated folder ID acquisition request, and sends the folder-ticket-associated folder ID acquisition response, which includes the folder ID, to the client B.

FIG. 15 is a program showing an example of the document storage request.

As shown in FIG. 15, in the document storage request, the tag `<sessionid></sessionid>` includes the folder-ticket-associated session ticket obtained in FIG. 12, the tag `<title></title>` includes the title of the document stored in the folder of the document management server 10, the tag `<content></content>` includes the content of the document stored in the folder of the document management server 10, and the tag `<creator></creator>` includes the name of the user who creates the document.

The client B sends the document storage request as shown in FIG. 15 to the document management server 10.

Further, the document storage request as shown in FIG. 15 may also include layer structure information of folders in the document management server 10, and thereby, for example, the document management server 10 can create a sub-folder below the specified folder, and store the document therein.

FIG. 16 is a program showing an example of the document storage response.

As shown in FIG. 16, in the document storage response, the tag `<returnValue></returnValue>` includes the document ID for identifying the stored document.

After storing the specified document to the

specified folder, the document management server 10 sends the document storage response, which includes the document ID for identifying the stored document, to the client B in response to the document storage request as shown in FIG. 15.

FIG. 17 is a program showing an example of the document list acquisition request.

As shown in FIG. 17, in the document list acquisition request, the tag `<sessionid></sessionid>` includes the folder-ticket-associated session ticket obtained by the client B as shown in FIG. 12.

The client A may obtain the folder-ticket-associated session ticket from the document management server 10 in the same manner as steps S16 and S17 illustrated in FIG. 2.

The tag `<folderId></folderId>` includes the folder ID for identifying folders in the document management server 10.

The client A sends the document list acquisition request as shown in FIG. 17 to the document management server 10.

FIG. 18 is a program showing an example of the document list acquisition response.

As shown in FIG. 18, in the document list acquisition response, the tag `<identifier></identifier>`

includes a document ID for identifying a document, the tag `<title></title>` includes a title of the document, and the tag `<creator></creator>` includes the name of the user who creates the document.

5                   In response to the document list acquisition request as shown in FIG. 17, the document management server 10 sends the document list acquisition response, which includes a list of the documents stored in the specified folder, to the client A.

10                   The document management server 10 may also send the document list to a client in response to a request from the client.

FIG. 19 is a program showing an example of the document content acquisition request.

15                   As shown in FIG. 19, in the document content acquisition request, the tag `<sessionid></sessionid>` includes the folder-ticket-associated session ticket obtained by the client B as shown in FIG. 12.

As described with reference to FIG. 17, the  
20   client A may obtain the folder-ticket-associated session ticket from the document management server 10 in the same manner as steps S16 and S17 illustrated in FIG. 2.

                  The tag `<docId></docId>` includes the  
25   document ID for identifying a document.

The client A sends the document content acquisition request as shown in FIG. 19 to the document management server 10.

FIG. 20 is a program showing an example of  
5 the document content acquisition response.

As shown in FIG. 20, in the document content acquisition response, the tag  
<returnValue></returnValue> includes the contents of the document.

10 In response to the document content acquisition request as shown in FIG. 19, the document management server 10 sends the document content acquisition response, which includes the contents of the specified document stored in the specified folder,  
15 to the client A.

The document management server 10 may also send the contents of the document to a client in response to a request from the client.

Below, the operation of document storage in  
20 the document management server 10 is described with reference to FIG. 21.

FIG. 21 is a flowchart showing an example of the operation of document storage in the document management server 10.

25 In step S30, the document management server



10 receives the document storage request as shown in  
FIG. 15 from a client.

Next, in step S31, the document management  
server 10 determines whether the session ticket  
5 included in the document storage request received in  
step S30 is a valid one.

If the document management server 10  
determines that the session ticket is a valid one, the  
routine proceeds to step S32, otherwise, the routine is  
10 terminated.

For example, the document management server  
10 determines the validity of the session ticket by  
comparing the session ticket held in the document  
management server 10 and the session ticket included in  
15 the document storage request received in step S30.

In step S32, the document management server  
10 determines whether the session ticket included in  
the document storage request received in step S30 is a  
folder-ticket-associated session ticket, that is,  
20 whether the session ticket is included in the document  
storage request together with a folder ticket.

If the document management server 10  
determines that the session ticket is a folder-ticket-  
associated session ticket, the routine proceeds to step  
25 S33, otherwise, the routine proceeds to step S34.

For example, by referring to the content of the session ticket as shown in FIG. 4, the document management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S30, and thereby determining whether the session ticket included in the document storage request received in step S30 is a folder-ticket-associated session ticket.

In step S33, the document management server 10 determines whether the folder corresponding to the folder ID included in the document storage request received in step S30 is a folder to which document storage by using the folder ticket is permitted.

If the document management server 10 determines that the specified folder is a document-storage-permitted folder, the routine proceeds to step S34, otherwise, the routine stops.

For example, the document management server 10 compares the folder ID included in the received document storage request with the folder ticket as shown in FIG. 3, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 4, and determines whether the folder corresponding to the folder ID included in the received document storage request is a document-storage-permitted folder.

In step S34, the document management server  
10 stores the document specified by the received  
document storage request in the specified folder.

In step S35, the document management server  
5 10 sends the document storage response, which includes  
the document ID for identifying the stored document, as  
shown in FIG. 16, to the client that made the document  
storage request.

10 <Time Limit>

Below, a folder ticket with a time limit is  
explained with reference to FIG. 22 through FIG. 24.

FIG. 22 is a program showing a second  
example of the folder ticket acquisition request.

15 In the folder ticket acquisition request  
shown in FIG. 22, comparing with that in FIG. 7, there  
is an additional tag <timeLimit></timeLimit>, and the  
time limit of the folder ticket is given by the tag  
<timeLimit></timeLimit>.

20 FIG. 23 is a table showing a second example  
of the folder ticket.

In the folder ticket shown in FIG. 23,  
comparing with that in FIG. 3, there is also an item of  
time limit. By incorporating the time limit into the  
25 folder ticket, it is possible to set the time limit of

the folder ticket, and this improves security of the document management method and the document management server 10.

FIG. 24 is a flowchart showing an example of the operation of time limit confirmation at the beginning of the folder-ticket-associated session.

In step S40, the document management server 10 receives the folder-ticket-associated session ticket acquisition request, as shown in FIG. 11, from a client.

Next, in step S41, the document management server 10 determines whether the folder ticket included in the folder-ticket-associated session ticket acquisition request received in step S40 is within the time limit.

If the document management server 10 determines that the folder ticket is within the time limit, the routine proceeds to step S42, and if the folder ticket is not within the time limit, the routine is terminated.

For example, by referring to the content of the folder ticket as shown in FIG. 23, the document management server 10 finds the time limit in the folder ticket included in the folder-ticket-associated session ticket acquisition request received in step S40, and determines whether the folder ticket received in step

S40 is within the time limit.

In step S42, the document management server 10 creates the content of the session ticket and identification information as shown in FIG. 4, and  
5 holds the session ticket.

Next, in step S43, by using the session ticket ID created in step S42 as the session ticket, the document management server 10 sends the folder-ticket-associated session ticket acquisition response  
10 including the session ticket, as shown in FIG. 12, to the client that made the folder-ticket-associated session ticket acquisition request.

When the document management server 10 receives the folder-ticket-associated session ticket acquisition request, by confirming the time limit of  
15 the folder ticket, it is possible to forbid usage of the expired folders, and this improves security of the document management method and the document management server 10.

20 Alternatively, as shown in FIG. 24, When the document management server 10 receives the folder-ticket-associated session ticket acquisition request, the document management server 10 may constantly monitor the folders and check the presence of expired  
25 folders instead of checking the time limit directly,

and thereby forbidding usage of the expired folders.

With the above configuration, it is not necessary to manage the folders out of the time limit.

## 5 <Connection Limit>

Below, a folder ticket with a limit number of connections is explained with reference to FIG. 25 through FIG. 27.

FIG. 25 is a program showing a third example  
10 of the folder ticket acquisition request.

In the folder ticket acquisition request shown in FIG. 25, comparing with that in FIG. 7, there is an additional tag <entryCount></entryCount>, which specifies the limit number of connections between a  
15 client and the document management server 10 by using the folder ticket.

FIG. 26 is a table showing a third example of the folder ticket.

In the folder ticket shown in FIG. 26,  
20 comparing with that in FIG. 3, there is an item of connection limit indicating the limit number of connections between a client and the document management server 10. By incorporating the item of limit number of connections into the folder ticket, it  
25 is possible to limit the number of connections, and

this improves security of the document management method and the document management server 10.

FIG. 27 is a flowchart showing an example of the operation of confirmation of the limit number of connections at the beginning of the folder-ticket-associated session.

In step S50, the document management server 10 receives the folder-ticket-associated session ticket acquisition request as shown in FIG. 11 from a client.

10           Next, in step S51, the document management server 10 determines whether the limit number of connections between the client and the document management server 10 by using the folder ticket, which is included in the folder-ticket-associated session  
15   ticket acquisition request received in step S50, is equal to or greater than one.

If the document management server 10 determines that the limit number of connections is equal to or greater than one, the routine proceeds to  
20   step S52, otherwise, the routine is terminated.

For example, by referring to the contents of the folder ticket shown in FIG. 26, the document management server 10 finds the limit number of connections included in the folder-ticket-associated  
25   session ticket acquisition request received in step S50,

and determines whether the limit number of connections received in step S50 is equal to or greater than one.

In step S52, the document management server 10 decreases the limit number of connections by one,  
5 which is included in the folder-ticket-associated session ticket acquisition request received in step S50.

Next, in step S53, the document management server 10 creates the content of the session ticket and identification information as shown in FIG. 4, and  
10 holds the session ticket.

Next, in step S54, by using the session ticket ID created in step S53 as the session ticket, the document management server 10 sends the folder-ticket-associated session ticket acquisition response  
15 including the session ticket, as shown in FIG. 12, to the client that made the folder-ticket-associated session ticket acquisition request.

When the document management server 10 receives the folder-ticket-associated session ticket  
20 acquisition request, by confirming the limit number of connections between a client and the document management server 10 by using the folder ticket, it is possible to forbid usage of the folders that have been connected for a number of times over the limit number,  
25 and this improves security of the document management



method and the document management server 10.

<Document Storage Limit>

Below, a folder ticket with a limit number  
5 of operations of document storage is explained with  
reference to FIG. 28 through FIG. 31.

FIG. 28 is a program showing a fourth  
example of the folder ticket acquisition request.

In the folder ticket acquisition request  
10 shown in FIG. 28, comparing with that in FIG. 7, there  
is an additional tag <putDocCount></putDocCount>, which  
specifies the limit number of operations of document  
storage in a folder in the document management server  
10.

15 FIG. 29 is a table showing a fourth example  
of the folder ticket.

In the folder ticket shown in FIG. 29,  
comparing with that in FIG. 3, there is an item of  
storage operation limit indicating the limit number of  
20 operations of document storage in a folder in the  
document management server 10. By incorporating the  
item of the number of document storage operations into  
the folder ticket, it is possible to limit the number  
of operations of document storage in a folder in the  
25 document management server 10, and this improves

security of the document management method and the document management server 10.

FIG. 30 is a table showing a second example of the folder-ticket-associated session ticket.

5           The folder-ticket-associated session ticket shown in FIG. 30, which is the same as that in FIG. 4, includes a session ticket ID and a folder ticket ID, but the folder ticket corresponding to the folder ticket ID in FIG. 30, as that shown in FIG. 29,  
10 includes the limit number of operations of document storage in a folder in the document management server 10.

FIG. 31 is a flowchart showing an example of the operation of confirmation of the limit number of  
15 the document storage operations when storing a document in a folder in the document management server 10.

In step S60, the document management server 10 receives the document storage request as shown in FIG. 15 from a client.

20           Next, in step S61, the document management server 10 determines whether the session ticket included in the document storage request received in step S60 is a valid one.

If the document management server 10  
25 determines that the session ticket is a valid one, the

routine proceeds to step S62, otherwise, the routine is terminated.

For example, the document management server 10 determines the validity of the session ticket by  
5 comparing the session ticket held in the document management server 10 and the session ticket included in the document storage request received in step S60.

In step S62, the document management server 10 determines whether the session ticket included in  
10 the document storage request received in step S60 is a folder-ticket-associated session ticket, that is, whether the session ticket is included in the document storage request together with a folder ticket.

If the document management server 10  
15 determines that the session ticket is a folder-ticket-associated session ticket, the routine proceeds to step S63, otherwise, the routine proceeds to step S66.

For example, by referring to the content of the session ticket as shown in FIG. 30, the document  
20 management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S60, and determines whether the session ticket included in the document storage request received in step S60 is a folder-ticket-associated session ticket.

25 In step S63, the document management server

10 determines whether the folder corresponding to the folder ID included in the document storage request received in step S60 is a folder to which document storage by using the folder ticket is permitted.

5           If the document management server 10 determines that the specified folder is a document-storage-permitted folder, the routine proceeds to step S64, otherwise, the routine stops.

          For example, the document management server  
10   10 compares the folder ID included in the received document storage request with the folder ticket as shown in FIG. 29, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 30, and determines whether the folder corresponding to  
15   the folder ID included in the received document storage request is a document-storage-permitted folder.

          In step S64, the document management server  
10   10 determines whether the limit number of the document storage operations included in the folder ticket as  
20   shown in FIG. 29 is equal to or greater than one.

          If the document management server 10 determines that the limit number of the document storage operations is equal to or greater than one, the routine proceeds to step S65, otherwise, the routine is  
25   terminated.

For example, by referring to the contents of the session ticket shown in FIG. 30, the document management server 10 finds the folder ticket ID received in step S60, then by referring to the contents of the folder ticket shown in FIG. 29, the document management server 10 finds the limit number of the document storage operations received in step S60 and determines whether the received limit number of document storage operations is equal to or greater than one.

In step S65, the document management server 10 decreases the limit number of the document storage operations included in the folder ticket as shown in FIG. 29 by one.

15 In step S66, the document management server 10 stores the document specified by the received document storage request in the specified folder.

In step S67, the document management server 10 sends the document storage response including the document ID for identifying the stored document, as shown in FIG. 16, to the client that made the document storage request.

When the document management server 10 receives the document storage request, by confirming 25 the limit number of operations of document storage in a

folder of the document management server 10, it is possible to forbid usage of folders whose assigned number of document storage operations has been used up, and this improves security of the document management method and the document management server 10.

It should be noted that although FIG. 31 illustrates the operation of confirming the limit number of the document storage operations when storing a document in a folder, when the folder ticket permits rewriting or deleting documents stored in the folder, and when a request of rewriting or deleting documents is received from a client, the document management server 10 operates in the same way as shown in FIG. 31, except that the step S65 is not needed.

#### <Storage Capacity Limit>

Below, a folder ticket with a limit of the storage capacity is explained with reference to FIG. 32 through FIG. 35.

FIG. 32 is a program showing a fifth example of the folder ticket acquisition request.

In the folder ticket acquisition request shown in FIG. 32, comparing with that in FIG. 7, there is an additional tag <putDocCapacity></putDocCapacity>, which specifies the limit storage capacity of a folder

of the document management server 10.

FIG. 33 is a table showing a fifth example of the folder ticket.

In the folder ticket shown in FIG. 33,  
5 comparing with that in FIG. 3, there is an item of storage capacity limit of a folder of the document management server 10 in units of MB (Megabyte). By incorporating the item of the storage capacity limit into the folder ticket, it is possible to limit the  
10 amount of the documents stored in a folder in the document management server 10, and this improves security of the document management method and the document management server 10.

FIG. 34 is a table showing a third example  
15 of the folder-ticket-associated session ticket.

The folder-ticket-associated session ticket shown in FIG. 34, which is the same as that in FIG. 4, includes a session ticket ID and a folder ticket ID, but the folder ticket corresponding to the folder  
20 ticket ID in FIG. 34, as that shown in FIG. 33, includes the storage capacity limit of a folder in the document management server 10.

FIG. 35 is a flowchart showing an example of the operation of confirmation of the storage capacity  
25 limit when storing a document in a folder in the

document management server 10.

In step S70, the document management server 10 receives the document storage request as shown in FIG. 15 from a client.

5               Next, in step S71, the document management server 10 determines whether the session ticket included in the document storage request received in step S70 is a valid one.

              If the document management server 10  
10 determines that the session ticket is a valid one, the routine proceeds to step S72, otherwise, the routine is terminated.

              For example, the document management server 10 determines the validity of the session ticket by  
15 comparing the session ticket held in the document management server 10 and the session ticket included in the document storage request received in step S70.

              In step S72, the document management server 10 determines whether the session ticket included in  
20 the document storage request received in step S70 is a folder-ticket-associated session ticket, that is, whether the session ticket is included in the document storage request together with a folder ticket.

              If the document management server 10  
25 determines that the session ticket is a folder-ticket-



associated session ticket, the routine proceeds to step S73, otherwise, the routine proceeds to step S76.

For example, by referring to the content of the session ticket as shown in FIG. 34, the document management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S70, and determines whether the session ticket included in the document storage request received in step S70 is a folder-ticket-associated session ticket.

10 In step S73, the document management server 10 determines whether the folder corresponding to the folder ID included in the document storage request received in step S70 is a folder to which document storage by using the folder ticket is permitted.

15 If the document management server 10 determines that the specified folder is a document-storage-permitted folder, the routine proceeds to step S74, otherwise, the routine stops.

For example, the document management server 20 10 compares the folder ID included in the received document storage request with the folder ticket as shown in FIG. 33, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 34, and determines whether the folder corresponding to 25 the folder ID included in the received document storage

request is a document-storage-permitted folder.

In step S74, the document management server 10 determines whether the difference between the storage capacity limit included in the folder ticket as shown in FIG. 33 and the requested storage capacity included in the document storage request received in step S70 is greater than zero.

If the document management server 10 determines that the difference is greater than zero, the routine proceeds to step S75, otherwise, the routine is terminated.

In step S75, the document management server 10 subtracts the requested storage capacity included in the document storage request received in step S70 from the storage capacity limit included in the folder ticket as shown in FIG. 33.

In step S76, the document management server 10 stores the document specified by the received document storage request in the folder specified by the document storage request.

In step S77, the document management server 10 sends the document storage response including the document ID for identifying the stored document, as shown in FIG. 16, to the client that made the document storage request.

When the document management server 10 receives the document storage request, by confirming the document storage capacity limit of a folder in the document management server 10, it is possible to forbid  
5 usage of folders whose assigned storage capacity has been used up, and this improves security of the document management method and the document management server 10.

#### 10 <Multiple Folders>

Below, a folder ticket with folder IDs of a number of folders is explained with reference to FIG. 36 and FIG. 37.

FIG. 36 is a program showing a sixth example  
15 of the folder ticket acquisition request.

In FIG. 36, the argument of the variable "getFolderTicket" in the folder ticket acquisition request is an array of character strings, while in FIG. 7, the argument of the variable "getFolderTicket" in  
20 the folder ticket acquisition request is a single character string.

In FIG. 36, in the tag <folderId></folderId>, there are a series of tags <item></item>, and each of the tags <item></item> includes a folder ID for  
25 identifying one of the folders operable by referring to

the folder ticket.

FIG. 37 is a table showing a sixth example of the folder ticket.

In the folder ticket shown in FIG. 37,  
5 comparing with that in FIG. 3, there are more than one folder ID for identifying more than one folder operable by referring to the folder ticket.

By incorporating more than one folder IDs for identifying more than one folder that are operable  
10 by referring to the folder ticket, the document management server 10 can use more than one folder with only one folder ticket.

#### <Sub-folder Usage Permission>

15 In the above, it is described that the document management server 10 creates a folder ticket and permits storage of documents in a usage-permitted folder or permit edition of documents stored in the folder.

20 Below, with reference to FIG. 38 and FIG. 39, an explanation is made of a case in which the document management server 10 permits usage of sub-folders of a usage-permitted folder.

FIG. 38 is a schematic view showing an  
25 example of a layer structure of a folder.

As shown in FIG. 38, a root folder A has a sub-folder B, a sub-folder C, and a sub-folder D, which are one-layer lower than the root folder A.

The folder B has a sub-folder E and a sub-  
5 folder F, which are one-layer lower than the folder B.

The folder C has a sub-folder G which is one-layer lower than the folder C. Further, the folder G has a sub-folder H which is one-layer lower than the folder G.

10 As described below, if the document management server 10 creates a folder ticket and permits a client to use the folder B, as long as the folder ticket is valid, not only the folder B, but also its sub-folders, that is, the folder E and folder F,  
15 can be used.

FIG. 39 is a flowchart showing a second example of the operation of document storage in the document management server 10.

In step S80, the document management server  
20 10 receives the document storage request as shown in FIG. 15 from a client.

Next, in step S81, the document management server 10 determines whether the session ticket included in the document storage request received in  
25 step S80 is a valid one.

If the document management server 10 determines that the session ticket is a valid one, the routine proceeds to step S82, otherwise, the routine is terminated.

5               For example, the document management server 10 determines the validity of the session ticket by comparing the session ticket held in the document management server 10 and the session ticket included in the document storage request received in step S80.

10               In step S82, the document management server 10 determines whether the session ticket included in the document storage request received in step S80 is a folder-ticket-associated session ticket, that is, whether the session ticket is included in the document  
15 storage request together with a folder ticket.

If the document management server 10 determines that the session ticket is a folder-ticket-associated session ticket, the routine proceeds to step S83, otherwise, the routine proceeds to step S86.

20               For example, by referring to the content of the session ticket as shown in FIG. 4, the document management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S80, and thereby determining whether the  
25 session ticket included in the document storage request

received in step S80 is a folder-ticket-associated session ticket.

In step S83, the document management server 10 determines whether the folder corresponding to the 5 folder ID included in the document storage request received in step S80 is a folder to which document storage by using the folder ticket is permitted.

If the document management server 10 determines that the specified folder is a document-storage-permitted folder, the routine proceeds to step 10 S86, otherwise, to step S84.

For example, the document management server 10 compares the folder ID included in the received document storage request with the folder ticket as 15 shown in FIG. 3, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 4, and determines whether the folder corresponding to the folder ID included in the received document storage request is a document-storage-permitted folder.

20 In step S84, the document management server 10 determines whether the folder corresponding to the specified folder ID is a root folder.

If the document management server 10 determines the specified folder is a root folder, the 25 routine stops, otherwise, the routine proceeds to step

S85.

In step S85, the document management server 10 obtains the ID of the parent folder of the folder corresponding to the specified folder ID, and proceeds  
5 to step S83, and repeats.

In step S86, the document management server 10 stores the document specified by the received document storage request in the specified folder.

In step S87, the document management server  
10 10 sends the document storage response, which includes the document ID for identifying the stored document, as shown in FIG. 16, to the client that made the document storage request.

By the operations as shown in FIG. 39, while  
15 being able to create a folder ticket and permit document storage in a usage-permitted folder or permit edition of documents stored in the folder, it is also possible to permit document storage in a sub-folder of the usage-permitted folder or permit edition of  
20 documents stored in the sub-folder.

<Document Ticket>

It is described above that the document management server 10 creates the document storage  
25 response, as shown in FIG. 16, including a document ID



for identifying a stored document in response to the document storage request, and sends the document storage response to the client that made the document storage request.

5               Below, with reference to FIG. 40 and FIG. 41, it is described that the document management server 10 sends a document storage response including a document ID and a document ticket that permits usage of a document to the client that made the document storage  
10 request.

FIG. 40 is a flowchart showing a third example of the operation of document storage in the document management server 10. The operations from step S90 to step S94 are the same as the operations from  
15 step S30 to step S34 shown in FIG. 21.

In step S90, the document management server 10 receives the document storage request as shown in FIG. 15 from a client.

Next, in step S91, the document management  
20 server 10 determines whether the session ticket included in the document storage request received in step S90 is a valid one.

If the document management server 10 determines that the session ticket is a valid one, the  
25 routine proceeds to step S92, otherwise, the routine is

terminated.

For example, the document management server 10 determines the validity of the session ticket by comparing the session ticket held in the document management server 10 and the session ticket included in the document storage request received in step S90.

In step S92, the document management server 10 determines whether the session ticket included in the document storage request received in step S90 is a folder-ticket-associated session ticket, that is, whether the session ticket is included in the document storage request together with a folder ticket.

If the document management server 10 determines that the session ticket is a folder-ticket-associated session ticket, the routine proceeds to step S93, otherwise, the routine proceeds to step S94.

For example, by referring to the content of the session ticket as shown in FIG. 4, the document management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S90, and thereby determining whether the session ticket included in the document storage request received in step S90 is a folder-ticket-associated session ticket.

In step S93, the document management server

10 determines whether the folder corresponding to the folder ID included in the document storage request received in step S90 is a folder to which document storage by using the folder ticket is permitted.

5               If the document management server 10 determines that the specified folder is a document-storage-permitted folder, the routine proceeds to step S94, otherwise, the routine stops.

              For example, the document management server  
10   10 compares the folder ID included in the received document storage request with the folder ticket as shown in FIG. 3, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 4, and determines whether the folder corresponding to the  
15   folder ID included in the received document storage request is a document-storage-permitted folder.

              In step S94, the document management server 10 stores the document specified by the received document storage request in the specified folder.

20               In step S95, the document management server 10 creates a document ticket that permits usage of a document stored in a folder, and sends a document storage response, as shown in FIG. 41 and described below, including a document ID for identifying the  
25   stored document and the document ticket to the client

that made the document storage request.

Because the document management server 10 sends the document storage response including both the document ID and the document ticket to the client, the client that stores the document by using the document ticket is able to obtain the document ticket that permits usage of the document, and uses the stored document with the document ticket.

FIG. 41 is a program showing another example of the document storage response.

In the document storage response shown in FIG. 41, comparing with that in FIG. 16, there is an additional tag <docTicket></docTicket>, which holds the document ticket that permits usage of the stored document.

<Edition Privilege>

Below, with reference to FIG. 42 and FIG. 43, an explanation is made of a case in which after storing documents in a folder, the document management server 10 grants an additional edition privilege, such as rewriting or deleting, to a folder ticket having only the privilege of documents storage in the folder.

FIG. 42 is a flowchart showing a fourth example of the operation of document storage in the

document management server 10.

In step S100, the document management server 10 receives the document storage request as shown in FIG. 15 from a client.

5               Next, in step S101, the document management server 10 determines whether the session ticket included in the document storage request received in step S100 is a valid one.

              If the document management server 10  
10       determines that the session ticket is a valid one, the routine proceeds to step S102, otherwise, the routine is terminated.

              For example, the document management server 10 determines the validity of the session ticket by  
15       comparing the session ticket held in the document management server 10 and the session ticket included in the document storage request received in step S100.

              In step S102, the document management server 10 determines whether the folder corresponding to the  
20       folder ID included in the document storage request received in step S100 is specified by the folder ticket to be a folder to which document storage is permitted.

              If the document management server 10  
              determines that the specified folder is a document-  
25       storage-permitted folder, the routine proceeds to step

S103, otherwise, the routine stops.

For example, the document management server 10 compares the folder ID included in the received document storage request with the folder ticket as shown in FIG. 3, which corresponds to the folder ticket ID included in the session ticket shown in FIG. 4, and determines whether the folder corresponding to the folder ID included in the received document storage request is a document-storage-permitted folder by using the folder ticket.

In step S103, the document management server 10 stores the document specified by the received document storage request in the specified folder.

In step S104, the document management server 10 determines whether the session ticket included in the document storage request received in step S130 is a folder-ticket-associated session ticket, that is, whether the session ticket is included in the document storage request together with a folder ticket.

If the document management server 10 determines that the session ticket is a folder-ticket-associated session ticket, the routine proceeds to step S105, otherwise, the routine proceeds to step S106.

For example, by referring to the content of the session ticket as shown in FIG. 4, the document

management server 10 confirms whether a folder ticket ID is included in the document storage request received in step S100, and thereby determining whether the session ticket included in the document storage request  
5 received in step S100 is a folder-ticket-associated session ticket.

In step S105, the document management server 10 appends the document ID for identifying the documents stored in a folder to the folder ticket with  
10 the document ID being an editable text.

In step S106, the document management server 10 sends the document storage response, which includes the document ID for identifying the stored document, as shown in FIG. 16, to the client that made the document  
15 storage request.

Because the document management server 10 appends the document ID for identifying documents stored in a folder to the folder ticket with the document ID being an editable text, the client having  
20 the folder ticket is capable of editing the document corresponding to the document ID.

FIG. 43 is a table showing an example of such a folder ticket.

In the folder ticket shown in FIG. 43,  
25 comparing with that in FIG. 3, there is a document ID,

which is an editable text, of a stored document.

Folders mentioned in this specification correspond to UNIX (registered trademark) or MS-DOS (registered trademark) directories.

5

#### EFFECT OF THE INVENTION

According to the present invention, it is possible to provide a document management device and a document management method that enables usage of a  
10 usage-permitted folder while ensuring high security without imposing an additional load on a network.